

**What is claimed is:**

1. A method for accessing a frame memory integrated within a display panel driver driving a display panel, said method comprising:

5           serially performing write operations for writing sub-field data of a pixel line within said display panel for a plurality of sub-fields into said frame memory; and

                    serially performing read operations for  
10   reading sub-field data of a plurality of pixel lines for a sub-field from said frame memory,

                    wherein at least two of said write operations are allowed to be performed between adjacent two of said read operations.

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2. The method according to claim 1, further comprising:

                    providing first and second horizontal sync signals,

20           wherein said write operations for writing said sub-field data of said pixel line for said plurality of sub-fields are performed during a single cycle of said first horizontal sync signal, and

25           wherein each of said read operations for reading said sub-field data of said pixel line for each of said plurality of sub-fields is

performed during a single cycle of said second horizontal sync signal.

3. The method according to claim 1, further  
5 comprising:

providing a read request signal activated for requesting said read operations, and

providing a write request signal activated for requesting said write operations,

10 wherein, in response to activation of said read request signal, associated one of said read operations is performed immediately after said activation of said read request signal when said frame memory is not engaged in write operation,  
15 while said associated one of said read operations is performed after completion of associated one of said write operations when said frame memory is engaged in said associated one of said write operations.

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4. The method according to claim 3, wherein said read request signal is kept activated until said associated one of said read operations is initiated.

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5. The method according to claim 1, further comprising:

providing a read request signal activated  
for requesting said read operations, and

providing a write request signal activated  
for requesting said write operations,

5            wherein, in response to activation of said  
write request signal, one of said write  
operations associated with said activation is  
performed immediately after said activation of  
said write request signal when said frame memory  
10 is not engaged in read nor write operation, said  
associated one of said write operations is  
performed after completion of associated one of  
said read operations when said frame memory is  
engaged in said associated one of said read  
15 operations, and said associated one of said write  
operations is performed after completion of  
previous one of said write operations when said  
frame memory is engaged in said previous one of  
said write operations.

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6.        The method according to claim 5, wherein  
said write request signal is kept activated until  
said associated one of said write operations is  
initiated.

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7.        A memory controller for controlling access  
to a frame memory comprising:

a timing controller developing read and write start pulse signals in response to write and read request signals, and

a read/write operation control unit  
5 responsive to said read and write start pulse signals for initiating read operations for reading sub-field data from said frame memory, and write operations for write sub-field data into said frame memory,

10 wherein said timing controller develops said read and write start pulse signals to allow said read/write operation control unit to initiate at least two of said write operations between adjacent two of said read operations.

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8. The memory controller according to claim 7, wherein said timing controller includes:

a state machine switching a state of said frame memory among a plurality of states in  
20 response to a reset signal, said write and read request signals, said plurality of states comprising:

an idle state,  
a write start state,  
25 a first write operation state, and  
a second write operation state,

wherein said state machine is designed to

switch said state of said frame memory to said  
idle state in response to activation of said  
reset signal, to switch said state of said frame  
memory to said write start state in response to  
5 first activation of said write request signal, to  
unconditionally switch said state of said frame  
memory to said first write operation state after  
placing said frame memory in said write start  
state to initiate one of said write operations,  
10 and to switch said state of said frame memory to  
said second write operation state in response to  
second activation of said write request signal  
during said one of said write operations to  
initiate next one of said write operations.

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9. The memory controller according to claim 8,  
wherein said plurality of states further  
comprising:

a read start state, and  
20 a read operation state,

wherein said state machine is designed to  
switch said state of said read start state in  
response to activation of said read request  
signal when said frame memory is placed in any of  
25 said idle state and said first and second write  
operation states, and to unconditionally switch  
said state of said frame memory to said read

operation state after placing said frame memory in said read start state to initiate one of said read operations.